

The Need

MSR is a miniature, continuous-sampling, quadrupole mass spectrometer, for use in general purpose on-line respiratory assessments. Using the very fastest gas analysis techniques, it can simultaneously measure a number of gases used in intrabreath and interbreath acquisition of metabolic exchange, gas mixing, washout, gas dilution, blood solubility and anaesthesia applications.

A complete, self-contained, tabletop system, or a metabolic cart styled system, the 7 channel analyser will accommodate turbine or ultrasonic flow transducers to measure breath by breath partial volumes. Versatile application software provides direct data streaming to user applications, classic analogue outputs or file-based storage, and an 'Excel' template program for data receipt and processing.



The features

- Accuracy and Speed.
- 7 simultaneous, respiratory gas measurements
- Unaffected by water vapour
- Spectral and Step analysis
- Low sample demand
- Excellent linearity
- Mouth or mask breathing options
- Data Streaming output
- Analogue/digital inputs for other devices – synchronised into run time data frame

The measurements

Gases: O₂, CO₂, N₂, Ar, SF₆, He, C₂H₂, C¹⁸O
 Response time 35ms
 Accuracy ± 0.1% abs
 Resolution 10ppm
 Sample flow rate 30ml / minute
 Sample transit time 480ms
 Linearity error < ±1%
 Stability ±1% rel
 Sampling rate 100Hz
 Flow: Ultrasonic or Turbine at mouth
 Inputs: 8 digital + 8 analogue devices
 Output: TCP I/P stream or 8 x12bit Analogue

At 20Kg, with a 50 W power requirement, the MSR is truly a low mass high spec mass spec.

Performance specification for 7 gas MSR

Gas	Full scale	RMS noise @ 0%	RMS noise	Signal /RMS noise	Response time 10 to 90%	Samples Averages
N2	100%	-	0.018 % @78% N2	4300 @78 % N2	40mS	Un averaged
N2	100%	-	0.013 % @78% N2	6000 @78 % N2	65mS	3
O2	35%	0.01% O2	0.015 % @21% O2	1400 @21% O2	40mS	Un averaged
O2	35%	0.008% O2	0.011 % @21% O2	1900 @21% O2	65mS	Un averaged
Ar	10%	0.004% Ar	0.005% @0.92% Ar	184 @ 0.92% Ar	40ms	Un averaged
Ar	10%	0.003% Ar	0.0035% @0.92% Ar	260 @ 0.92% Ar	65mS	3
CO2	10%	0.004% CO2	0.007%CO2	700 @ 5% CO2	40ms	Un averaged
CO2	10%	0.0035 %CO2	0.005 %CO2	1000 @ 5% CO2	65ms	3
He	10%	0.005% He	0.008 @ 4 % He	500 @ 4% He	40mS	Un averaged
He	10%	0.003% he	0.006 @4 % he	660 @ 4% he	65ms	3
SF6	5%	0.001% SF6	0.005 @ 4% SF6	800 @ 4 % SF6	40mS	Un averaged
SF6	5%	0.001% SF6	0.004 @4% SF6	1000 @ 4 % SF6	65ms	3
C2H2	2%	0.004% C2H2	0.004 @0.3 C2H2	75 @ 0.3% C2H2	40mS	Un averaged
C2H2	2%	0.003% C2H2	0.0028 @0.3 C2H2	107 @0.3%C2H2	65ms	3
C18O	5%	0.008% C18O	0.008 %C18O	40 @ 0.3% C18O	40mS	Un averaged
C18O	5%	0.006% C18O	0.006 %C18O	50 @ 0.3% C18O	65mS	3
C18O	5%	0.0045%C18O	0.0045% C18O	66 @0.3% C18O	130mS	8

